SEP 11 1981

SUMMARY EVALUATION OF RAPID TRANSIT ROUTES AND RECOMMENDATION OF PREFERRED ROUTE

HAMILTON-WENTWORTH RAPID TRANSIT PROJECT

URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

METRO CANADA LIMITED
MCL Report HW-1-15.10
July 10, 1981

004760

metro canada limited
Hamilton-Wentworth Rapid Transit Project Office
100 Main St.E., Hamilton, Ont. L8N 3W4 · telex 0618561 · (416) 523-8215

July 10, 1981

Mr. M.M. Ross
Project Co-Ordinator
Rapid Transit Project
100 Main Street East
Hamilton, Ontario
L8N 3V9

Dear Mr. Ross:

Subject: Report HW-15.10
Summary Evaluation of Rapid Transit Routes
and
Recommendation of Preferred Route

We are pleased to submit MCL Report HW-1-15.10, Summary Evaluation of Rapid Transit Routes and Recommendation of Preferred Route for the Technical Committee meeting of July 10, 1981. This report is submitted in accordance with the requirements described in Task 4.11 (Sub-section 4.11 of Schedule A to the UTDC - Region Pre-implementation Program Contract).

This report summarizes our evaluation of the four shortlisted rapid transit routes, and our reasons for recommending 'W' as the preferred route.

Yours very truly,

METRO CANADA LIMITED

P.J. McCann
Project Manager

PJM:jp

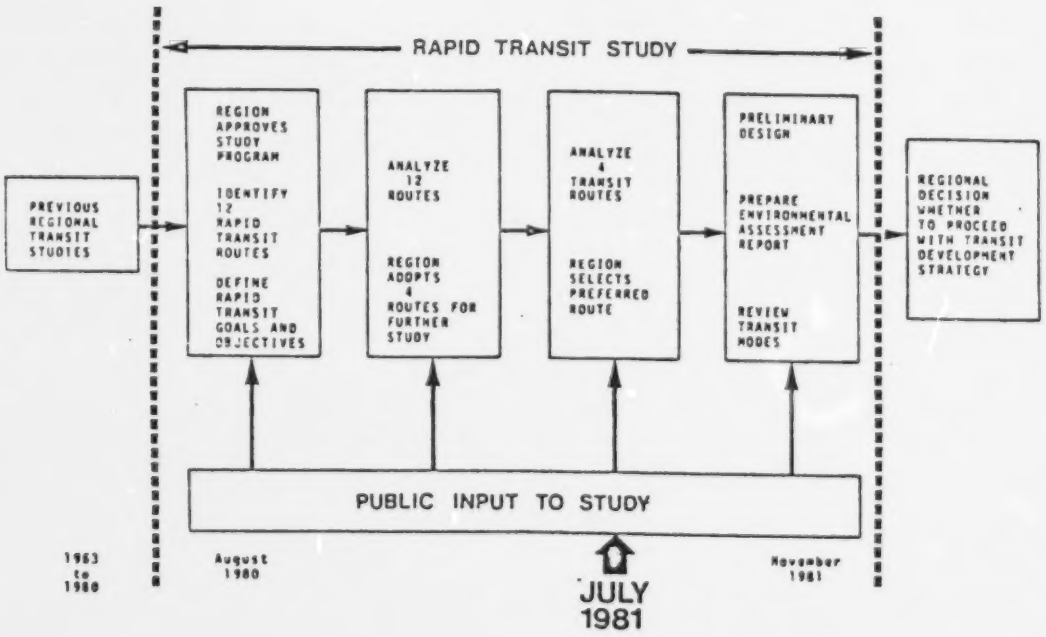
PREFACE

The Hamilton-Wentworth rapid transit study includes a series of key milestone points at which findings, recommendations and information are to be referred from the Study Team to Regional Council for consideration. Council has dealt with, among other things, information concerning the identification of 12 feasible rapid transit routes, and the reduction from 12 to four in the number of routes under study.

The most important Council decision to arise from this study, once it is completed in November 1981, will be whether to proceed with the proposed rapid transit service. The single most important Council decision to be taken during the course of this study is the selection of a preferred rapid transit route. This report summarizes Metro Canada's recommendation of a preferred route.

Once Regional Council has selected a preferred rapid transit route, Metro Canada will prepare more detailed studies, concentrating on the design of the system in sensitive areas along the route. These studies will be presented to Council as part of the information necessary for Council to decide whether to proceed with the rapid transit service.

STUDY PROCESS



SUMMARY

This report summarizes the results of the analysis and evaluation of the four potential rapid transit routes that have been under study for the past several months by Metro Canada Limited.

1. Metro Canada recommends that, regardless of which of the four routes is selected as the preferred route, that the southern terminal of the first stage of the rapid transit service be located at Mohawk Road.

2. Metro Canada recommends that the first choice for the preferred rapid transit route to be studied in greater detail is Route 'W'.

TABLE OF CONTENTS

		PAGE
1.0	INTRODUCTION	1
1.1	Purpose	1
1.2	Southern Terminal Location	1
2.0	EVALUATION CRITERIA	4
3.0	MAJOR DIFFERENCES	5
3.1	Transportation Criteria	5
3.2	Direct Social Impact	7
3.3	Indirect Social Impact Criteria	8
3.4	Public Input	9
3.5	Redevelopment	9
3.6	Costs	10
4.0	EVALUATION SUMMARY	11
4.1	Route 'W'	11
4.2	Route 'X'	11
4.3	Route 'Y'	12
4.4	Route 'Z'	12
5.0	RECOMMENDATION	14
6.0	ROUTE CHARACTERISTICS	17
7.0	ROUTE EVALUATION TABLES	21
7.1	Evaluation Criteria	21
7.2	Major Criteria	24
7.3	Summary Criteria	25

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this report is to summarize the evaluation of the major differences amongst rapid transit Routes 'W', 'X', 'Y', and 'Z', (see map attached) in order to recommend a preferred route for more intensive analysis and design.

Each of the four routes have been analyzed over a period of several months, and the characteristics of each have been previously reported in the Route Choices: Summary of Findings report issued in June 1981, and in its supporting study documents. These characteristics have been reviewed as part of the evaluation process, and have been updated and applied to the evaluation criteria as appropriate.

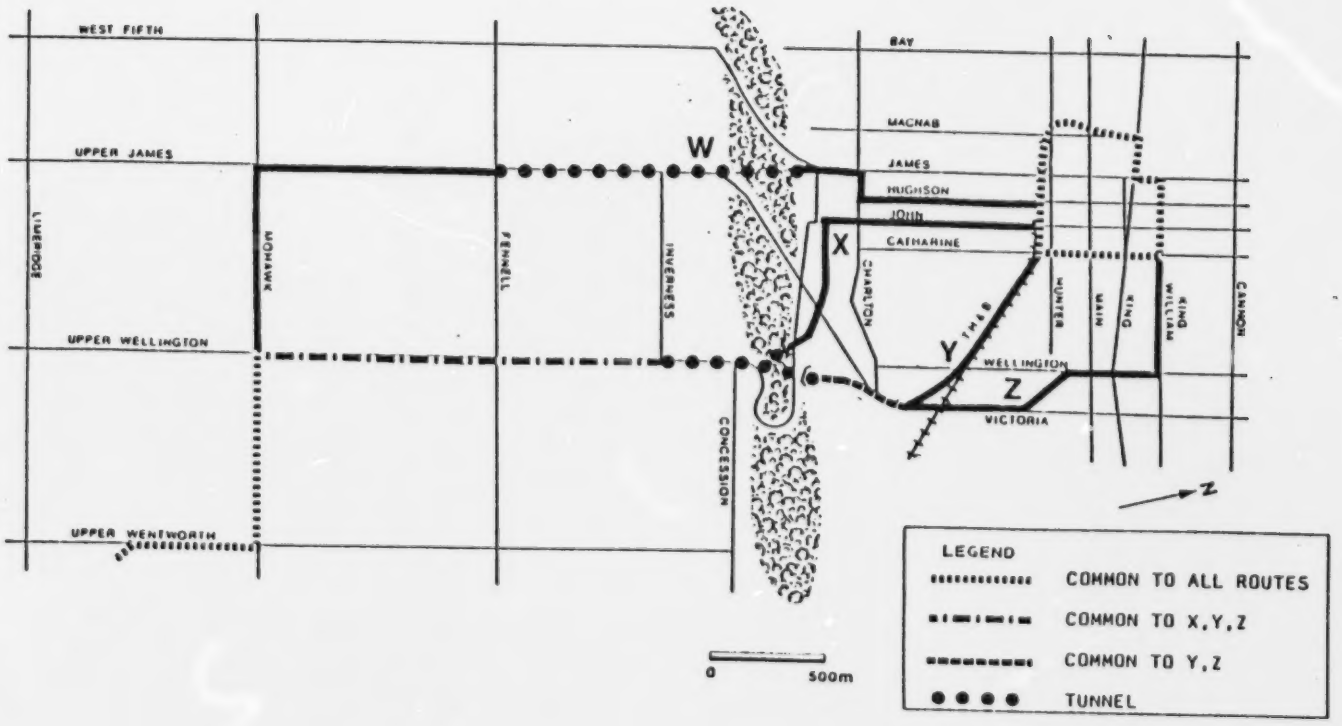
As the downtown one-way loop section is identical for all routes, the comparative evaluation does not take into consideration the downtown service area (Catharine, King William, James, King, MacNab, City Hall Parking Lot, TH &B). As well, there are recognized alignment options available within each route which have previously been analyzed in detail and are not included in this analysis.

1.2 SOUTHERN TERMINAL LOCATION

The pre-implementation program study has, from the point of initial route analysis, identified two potential construction stages. The first of these has extended from the downtown business district to either Fennell Ave. or Mohawk Rd. The second stage has extended from the southern terminal of the first stage (Fennell or Mohawk) to the new sub-centre in the area of Limeridge Rd. and Upper Wentworth Street. This evaluation deals only with the first construction stage.

URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

RAPID TRANSIT ALIGNMENTS



A terminii at either Fennell Ave. or Mohawk Rd. has been considered for each of the four Routes 'W', 'X', 'Y', and 'Z'. Metro Canada Limited recommends that the southern terminal of the first stage of the rapid transit service be located at Mohawk Road, regardless of which of the four routes is identified as the preferred one. The primary reason for this recommendation is that passenger orgin-destination information shows that at least 45% of all rapid transit riders are located within the catchment area of a Mohawk Rd. station, and that approximately 70% of all riders would benefit from an extension to Mohawk Road.

Supporting reasons for this recommendation include:

- o the reduction in bus kilometres and bus operating costs, without loss of farebox revenue, associated with a Mohawk Rd. station
- o the spreading of redevelopment opportunities associated with having an additional Mountain rapid transit station
- o an operationally better bus feeder network associated with the Mohawk extension
- o improved bus station operations resulting from spreading feeder buses amongst more Mountain stations
- o additional travel time savings offered by the extension of the rapid transit service to Mohawk Rd.
- o improved service to residential concentration associated with a Mohawk Road station
- o the relative availability of non-residential land for transit terminal use at Mohawk Road compared to Fennell Avenue.

The evaluation that follows is based on the construction of each of Routes 'W', 'X', 'Y' and 'Z' from the downtown to a southern terminal at Mohawk Road.

2.0 EVALUATION CRITERIA

Appended to this report is a chart showing the criteria used to evaluate the four routes and the characteristics of each route relative to the criteria. These criteria have been drawn from Report HW-1-14.0 Evaluation Methods and Criteria for Recommended Alignment Selection, where they are developed and explained in detail. Initially, more criteria than those shown in the summary chart were applied to the evaluation of the four routes. However, some criteria reflected no difference amongst routes and therefore have not been included in the summary chart. The summary chart shows major and minor criteria, some of which exhibit major differences and others which exhibit minor differences.

3.0 MAJOR DIFFERENCES

The following notes highlight the major differences amongst the four routes. For the purpose of this report the large number of criteria have been grouped under the major headings:

- o transportation
- o direct social impact
- o indirect social impact
- o public input
- o redevelopment
- o cost

3.1 TRANSPORTATION CRITERIA

All routes satisfy the basic transportation requirement to provide and maintain a high standard of mobility across the escarpment, linking the existing and future Mountain communities with the downtown. However, beyond this basic criterion, more subtle differences exist between routes which relate to the ability of each to attract future riders onto the rapid transit service. They are as follows:

- o Route 'W' provides an excellent Mountain to St. Joseph's Hospital rapid transit service, but a Concession Street to downtown bus route must be retained to satisfy the travel demands of the Concession Street corridor.
- o Route 'X' removes all bus routes from the Jolley Cut by providing service from the Mountain, including the Concession Street corridor, to both the downtown and the St. Joseph's Hospital areas.
- o Route 'Y' provides a good opportunity to introduce an express bus route to the Bayfront industrial area from the station at Young St./TH & B.

- Route 'Z' provides improved service for transit users travelling between the Mountain and the east - central city, as well as providing an excellent opportunity to introduce an express bus route to the Bayfront industrial area from the station at King St./Wellington St.
- The potential to attract extra walk-in transit users from the Mountain is 50% greater along Routes 'X', 'Y', and 'Z' based on the population currently living within walking distance by each station.

Other substantive differences between routes within the transportation criteria are:

- Although Route 'Y' utilizes an existing transportation corridor along the TH&B right-of-way, use of this right-of-way is dependent upon negotiations with the TH&B and the CNR. The right-of-way cannot be expropriated. As well, there will be a need to construct a service road adjacent to the transit guideway, which may involve rail relocation.
- In time, Route 'Z' would encourage redevelopment at the King/Wellington growth node and this would increase rapid transit useage both to the downtown and to the Mountain.
- For future expansion, Route 'Z' provides the shortest distance to the east and to the Bayfront industrial area. All routes provide equivalent expansion opportunites to the west. Route 'W' terminates furthest from the new Limeridge subcentre, but would provide direct service to most people if extended to the subcentre.

3.2 DIRECT SOCIAL IMPACT CRITERIA

- Route 'W' passes by approximately 110 fewer homes (53 vs 161-169) than do Routes 'X', 'Y', or 'Z' and will cause a substantially lower visual and privacy impact.
- Route 'X' has the most substantial impact upon residential privacy due to its proximity to the high rise apartment developments along St. Joseph's Dr. and John St., as well as its close proximity to St. Joseph's Hospital Women's Wing and St. Elizabeth's Nursing Home.
- On the Mountain, where side street and driveway left turn access restrictions must occur due to sightline obstructions caused by the guideway alignments, Route 'W' directly impacts approximately 74 fewer dwelling units (104 vs 178) and indirectly impacts approximately 300 fewer homes than do Routes 'X', 'Y', or 'Z'. Six businesses are impacted on Route 'W' and 49 businesses are impacted on Routes 'X', 'Y' and 'Z'.
- For Route 'X', approximately five more homes must be acquired than for Routes 'Y' or 'Z', depending on owner option.
- Route 'W' will not require the acquisition of residential property, based on current designs.
- Routes 'X', 'Y', and 'Z' will involve the acquisition of 4 more commercial buildings, than will Route 'W', and may have potential negative impacts on other businesses. These impacts occur at the Mountain tunnel portal.
- Route 'W' will involve the removal of approximately 380 parking spaces from two Upper James St. plazas, for which either a reduced parking ratio or alternate parking structures will be required.

- Construction along Route 'X' will temporarily impact the sensitive area around St. Joseph's Hospital and St. Elizabeth's Nursing Home.
- The temporary loss of some parking from the Upper James St. plazas during construction along Route 'W' may affect business operations.
- Both during and after construction, the Upper Wellington St. business area (Inverness to Fennell) in Routes 'X', 'Y', and 'Z' will be less attractive to shoppers.

3.3 INDIRECT SOCIAL IMPACT CRITERIA

- Route 'W' passes St. Charles Church, but alignment options are available, at the discretion of the Church, that could minimize the aesthetic impact.
- Route 'X' closely passes the Church of the Ascension on John St. and will seriously detract from the facade of the historical building, as well as block some of the light entering the windows.
- Route 'W' passes the architecturally significant buildings along James St. between James Mountain Rd. and Charlton Ave. where it would be located on the opposite side of the street, and could be integrated with the Hospital's open space and future development program.
- Route 'W' enters a wooded natural area of the escarpment, whereas Routes 'X', 'Y', and 'Z' enter the escarpment in an existing transportation area where the escarpment face has been scarred and cleared in conjunction with roadway construction.
- Most streets used by Route 'W' are relatively wide in comparison with streets used by Routes 'X', 'Y' and 'Z', based on building face to building face distances. This lessens the impact upon the streetscape caused by Route 'W'.

- o More off-route residential units (30 vs 50) around stations will be impacted by bus activity along Routes 'X', 'Y', and 'Z' than along Route 'W'.
- o More trees of significance (greater than 4" in diameter) will be removed along Route 'W' (60 vs 30-40) than along Routes 'X', 'Y', or 'Z'. However, extensive tree replanting can, and should, occur on all routes as an impact mitigation measure.

3.4 PUBLIC INPUT (RESPONSE TO ADVERTISEMENT FLYERS AND OPEN HOUSES)

Of those people who have expressed a route preference (46% of the 725 respondents in June 1981)

- o Route 'W; is the first choice of 37% and the second choice of 3%.
- o Route 'X' is the first choice of 11% and the second choice of 24%.
- o Route 'Y' is the first choice of 22% and the second choice of 35%.
- o Route 'Z' is the first choice of 29% and the second choice of 30%.

Briefs received by the project and individual statements of preference expressed by the Community Advisory Committee members have generally favoured Routes 'Y' and 'Z'.

3.5 REDEVELOPMENT

- o The Central Mountain area close to the brow presents limited opportunities for redevelopment potential due to land availability and the stable residential neighbourhoods. There is land available in the area around the Limeridge centre and to the south of Limeridge Road.

- Spot redevelopment could occur at some station areas along Routes 'X', 'Y', and 'Z' on the Mountain where some vacant land is available.
- The major (non-CBD) redevelopment potential exists on Route 'Z' in the lower city where land availability and planning goals favour the development of the King/Wellington area.
- Routes 'W' and 'X' offer minimal redevelopment opportunities in the lower city due to the characteristics of the surrounding land uses and neighbourhood resistance.
- Route 'Y' offers limited opportunities in the lower city due to the low attractiveness of the TH&B railway corridor.

3.6 COSTS

- Route W: $111.1 M.
  Route X: $113.4 M.
  Route Y: $117.2 M.
  Route Z: $125.2 M.
- Minor differences occur in operating costs.

4.0 EVALUATION SUMMARY

In weighing the criteria and the performance of each route against the criteria, it is essential to consider both the short and long term benefits and impacts presented by each route. For example, although in the short term Route 'X' presents the best transportation option as it provides service to replace all Jolley Cut bus routes, in the long term, other routes may be more beneficial.

4.1 Route 'W'

From a transportation viewpoint, Route 'W' offers service between the Mountain and the Downtown, as well as providing direct service to St. Joseph's Hospital and the lower James St. business community. On the Mountain, Route 'W' utilizes a primarily commercial street with some impact upon the housing units which are now located along the street. It enters the escarpment through an existing wooded area but tree re-planting can occur to mitigate the environmental impact. It is the least expensive to construct and is a favoured route based upon public response. Some indirect social impacts will occur in the lower city area; the detailed route design would have to mitigate these. Much of the route through the lower city utilizies a route adjacent to areas of open space and vacant land to minimize impacts. Route 'W' is the route requiring the greatest additional distance for future expansion to the Regional sub-centre.

4.2 Route 'X'

Route 'X' can eliminate all bus routes from the Jolley Cut by providing access from the Concession Street

to the Downtown corridor, as well as all Mountain bus routes. However, it does have social impacts associated with its route both on the Mountain (Upper Wellington St.) and in the Downtown area (St. Joseph's Drive and John Street). It is the least favoured route by the public.

4.3 Route 'Y'

By favouring the TH&B transportation corridor, Route 'Y' eliminates a large amount of lower city social impacts. However, the route is dependent upon the approval of the TH&B and CNR and, if the railways do not agree, the alignment along the railway tracks may not be possible. As well, although the station at Young Street will provide a good opportunity for express bus service to the industrial area, it will not encourage significant development or ridership opportunities in the lower city. Route 'Y' also involves the substantial social impacts associated with the Upper Wellington Street area.

4.4 Route 'Z'

Route 'Z' offers the best long-term transportation opportunities of the four routes. It has the greatest potential for attracting new riders onto the rapid transit system by providing good service to both the Mountain community as well as the opportunity for express bus service to the industrial area. It also will provide better service for the large number of people whose origin or destination is in the lower east city area. Unfortunately, although its lower city social impacts are minor, (King William Street, CHARM), it would create substantial impacts while passing the residential and commercial uses now on Upper Wellington Street south of Inverness Avenue. Its impact upon the escarpment is

minimal, as it enters an area which is now used for transportation purposes. In addition, it would increase downtown development potential by encouraging growth at the King/Wellington node. This long-term benefit of further growth to the east of the downtown area is in accordance with the planning objectives of the Region. Route 'Z' costs the most, but it is also a favoured route by the public, mainly because of its greater coverage in the lower city area. Once constructed, it would also provide the best system expansion capability to the east and to the industrial area.

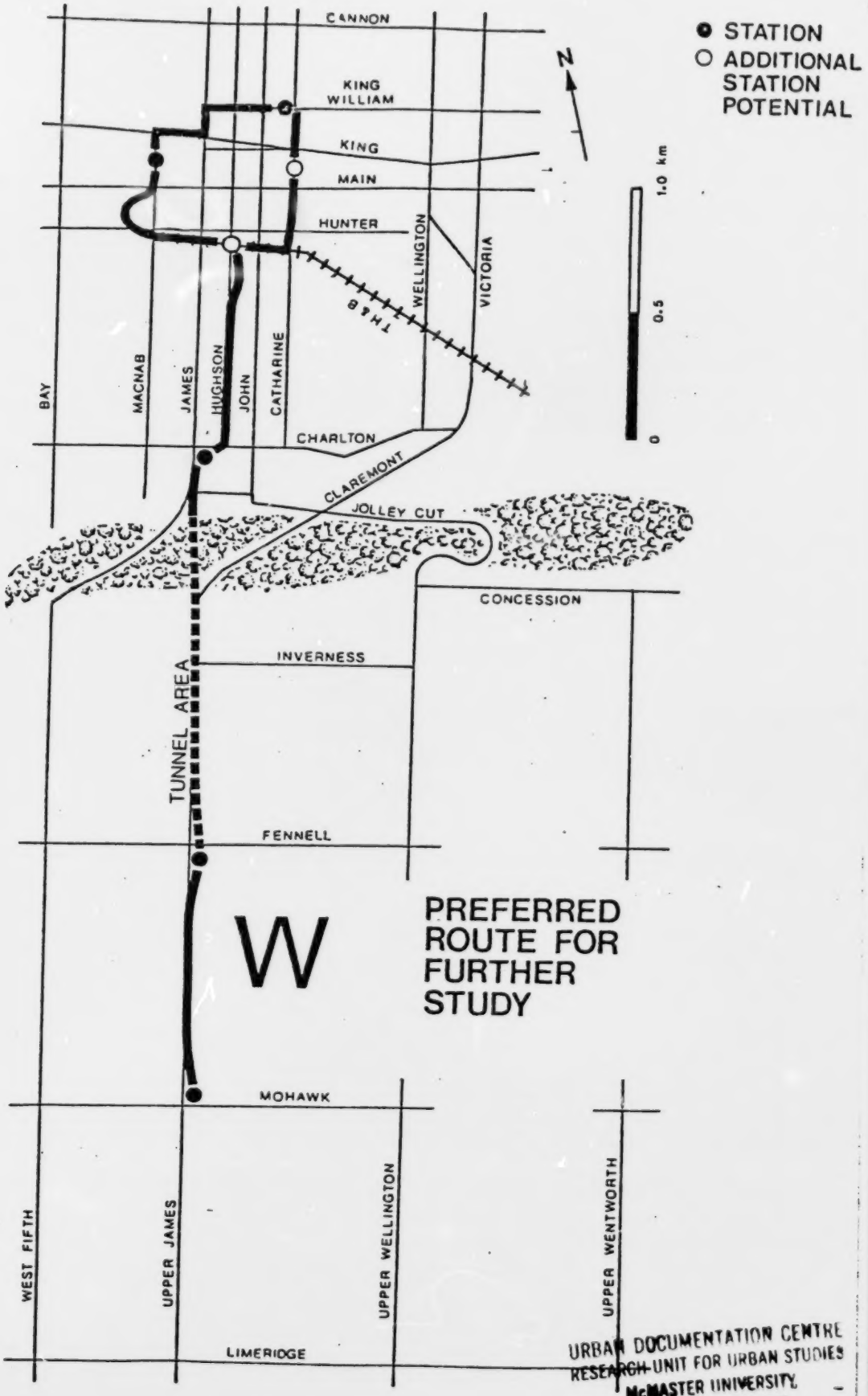
5.0 RECOMMENDATION:

- All four routes satisfy the basic transportation service requirements of the Central Mountain corridor. The two major areas where the most severe direct social impacts will occur are on Upper Wellington St. (Routes 'X', 'Y' and 'Z') and on St. Joseph's Dr./John St. (Route 'X'). To outweigh these impacts, substantial transportation, cost, and/or planning benefits must exist. Only Route 'Z' provides some potential to provide additional transportation benefits. Route 'Z' also provides the ability to satisfy the future development objective of encouraging and east-west oriented downtown through the development of the King/Wellington growth node. However, in addition to its substantial social impacts on Upper Wellington Street, Route 'Z' costs approximately $8 - $14 million more to construct than the other routes.

  Although Route 'W' has some lower city and escarpment impacts associated with its construction that must be mitigated, the social impacts (on the mountain) associated with Route 'W' are significantly lower than those associated with the other routes. On the Mountain, Route 'W' has the ability to utilize parking lots of commercial properties, with much less impact upon the residential properties along Upper James St., than the other routes have on Upper Wellington St. Route 'W' suffers some transportation disbenefits, such as the need for a bus between the downtown and the Concession St. corridor. However, the social impacts associated with the other three routes, particularly on the Mountain, favours the use of Route 'W'. Therefore, it is the recommendation of Metro Canada Limited that the first choice for the preferred rapid transit route to study in greater detail is Route 'W'.

  The second choice for a preferred route would be Route 'Z'.

This second choice is dependent on the ability to mitigate the substantial social impacts along Upper Wellington Street to the point where they become acceptable, and on the ability to finance the additional cost.



URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

6.0 ROUTE CHARACTERISTICS

TRANSPORTATION:	W	X	Y	Z
TRAVEL TIME MacNab St. Station to Mohawk Station	6 min/31 sec minimum	6 min/38 sec minimum	6 min/50 sec minimum	8 min/15 sec minimum
Rapid Transit Ridership: 1986/2001 Yearly	8,250,000/18,879,000	8,487,000/20,106,000	8,400,000/19,566,000	8,250,000/19,881,000
Potential to Attract More Riders				
1) Population around stations to reflect walk-in potential differences	3,900	5,600	5,700	6,100
2) Major Activity Centres served	St. Joseph's Hosp. 2 mountain stations	St. Joseph's Hosp. At Inverness Sta.	At Inverness Station At lower city station	At Inverness station At lower city station
3) Redevelopment Potential to increase rapid transit useage				
4) Major office employment at lower city station	380	0	0	112
Ancillary Facilities:				
o bus loops	(where required,) bus loops can be provided at all station sites			
o kiss 'n' ride	can be provided at all sites -- kiss'n' ride problems at Wellington/Mohawk station --			
o emergency & maintenance road	yes (James Mt. Rd. to portal)	YES (St. Joe's R.O.W.) CHARM TO PORTAL	YES (along TH&B) CHARM TO PORTAL	YES (CHARM to Portal)
o site layout difficulties for maintenance yard	SOME (Have to cross maintenance yards)	SOME (Have to cross maintenance yards)	NO (Parallels maintenance yards)	NO (Parallels maintenance)
SURFACE TRANSIT INTERFACE:				
Passenger Convenience				
o non-CBD connections	Service to St. Joe's plus James St. corridor. Industrial Express from CBD	Service to St. Joe's. Industrial Express from CBD	Industrial express connection at Young St. saves 2 minutes more than WX.	5 min less travel time for east lower city to mountain transfers (50% of all bus transfers). Excellent opportunity for industrial express services; saves 5 min.
o extra travel time	Transit riders are now oriented toward the East Mountain at a 2:1 ratio. Therefore, closer rapid transit is to east mountain, better service is provided. Estimated 2 minute extra travel time as compared to X,Y,Z	Transit users to west must be re-routed one major block (2 Min.) out of way (Downtown). This now occurs due to bus orientation.		
Bus System				
o feeder bus miles	18996 mi.	18456 mi.	18456 mi.	18456 mi.
o service area	Immediate benefit to 5,000 people to S.W.	Long range benefit to new population of 30,000 planned to Southeast (travel time saving)		
o bus miles on escarpment	Concession St. to CBD bus route must remain	All buses removed from escarpment	Inverness station to St. Joe's bus route must be put in service	Inverness station to St. Joe's bus route must be put in service
o express service option	Good potential to Mohawk College. CBD to industrial area	Some potential to Mohawk College. CBD to industrial area	Some potential to Mohawk College. Young to industrial provides good opportunities	Good to Mohawk College due to transfer movement. Wellington to Industrial provides excellent opportunities
ROAD INTERFACE:				
Capacity				
o Length of Pavement narrowed	No significant reduction in road traffic envisioned. Where rapid transit intrudes on roadway, traffic lane are reconstructed to satisfy road needs			
Side Street Access				
o Restrictions	right turns only at Southbend/Upper James	-----Right turns only at Norris, Dean, McElroy, Brucedale-------		
o Number of Homes Impacted	28	331	331	331

ROUTE CHARACTERISTICS

	W	X	Y	Z
PEDESTRIAN INTERFACE:				
Movements				
o sidewalk narrowing	No sidewalks need be removed	-----Commercial activity on Upper Wellington will be impacted due to sidewalk narrowing between Queensdale/ Brucedale		
PROPERTY ACCESS:				
Residential				
o Left turns restricted at homes/apartment units	42 houses/62 apt. units(104)	148 houses/30 apt. units(178)	148 houses/30 apt. units (178)	148 houses/30 apt. units (178)
Commercial				
o Left turns restricted	(Up. James: South-bend Richwill) 6 commercial units	---(Upper Wellington: Brucedale to Queensdale)--- 49 commercial units	49 commercial units	49 commercial units
o Importance of Access	Important (Hwy. Comm)	---Mainly Neighbourhood Comm. use + Municipal Parking Lots-------- on both sides of street		
Public				
o Emergency uses impacted by access restrictions	0	0	0	0
PARKING:				
o On street removed	9	0	0	0
o Business Impact	Professional Offices	0	0	0
o Alternate Parking Available	Yes, in adjacent parking lots	0	0	0
DISPLACED USES:				
Housing				
o Apartment Units	0	3 units at Inverness Station	3 units at Inverness Station	3 units at Inverness Station + 15 rooming house units at Main/Wellington
o Single Family (depend on owner option)	0	5 - John St. Station 1 - Mohawk Station	1 - Mohawk Station	1 - Mohawk Station
Commercial				
o Business Units	1	14	14	15
o Off Street Parking	380 spaces at Mountain Plazas	----	----	Some off street parking space areas along King William and Wellington for column placement. Minor impact
o Railway			Dependent upon R.O.W. uses from TH&B & CNR	
Public Uses				
o Buildings	0	Onteora School	Onteora School	Onteora School
o Open Space	Niagara Escarpment at tunnel portal, St. Joseph's Hospital parkette	Parkette at Fennell Ave.	Parkette at Fennell Ave.	Parkette at Fennell Ave.
o Potential for Re-placement	stairs can be re-located	-- Parkette can be redesigned into station. ---		
o Historical Buildings	0	0	0	0
PROXIMITY TO USES:				
Residential				
o Total Houses along Alignment	53	161	166	169
o Total houses at Portal	12	7	7	7
Dwelling Units				
o Potential for Privacy Impact (1½ - 3 storey units at 100')	57	168 (includes 64 medical beds)	72	94
Office and Commercial Frontage				
o Potential for Privacy Impact (2nd/3rd storey at 100')	4050'	3810'	3890'	4460'

	W	X	Y	Z
PROXIMITY TO USES: (cont'd)				
Public Uses				
o Open Space	James St. stairs adjacent to alignment	0	0	0
o Overshadowing	15 homes/midwinter have temporary shadow impacts	85 homes midwinter have temporary shadow impacts. Commercial corridor from Brucedale to Queensdale is darkened due to guideway and proximity of buildings		
o Sensitivity of Uses	St. Charles Church	St. Joseph's Hospital St. Elizabeth Nursing Home Church of the Ascension	0	0
o Hist/Arch Significance	Augusta/Hughson	Church of the Ascension	0	0
Number of Dwelling Units & Sensitive Uses Close to Stations				
o Increase in activity due to buses (impact adj. homes)	Mountain is Commercial areas mainly. Lower city is not a major bus transfer point (0)	Area around stations is mainly residential on mountain. Lower city is not a major bus transfer point (approx. 30)	Area around stations both above & below mountain is mainly residential(approx. 30)	Area around stations on mountain is mainly residential,lower city is mainly commercial (approx. 30)
Impact on Local Streets				
o Use by buses	----------Collector & Arterial Roads are used----------			
o Parking at stations	some parking may occur on plazas if not provided for in station design especially at terminal	some parking may occur on sidestreet and regulatory signs may have to be posted.		
Integration with Streets				
o right of way widths	100' Up. James, 66' James, Hughson, Charlton	66' Up. Well., John, St. Joseph's (varies)	66' Up. Wellington & TH &B R.O.W.	66' Up. Wellington 66' Wellington 66-48' King William
o building face to building face (minimum)	150', 210', 115'	120', 65', 140', 60'	120', 65', 180'	120', 65', 125', 75' 65'
o potential for future change in land uses along alignment to help integration	Good potential along Upper James St. corridor & Hughson St. corridor	Some potential along Upper Wellington St. north of Fennell Ave. Poor potential south of Fennell Ave. Some potential along John St.	Some potential along Upper Wellington St. north of Fennell Ave.; poor potential south of Fennell Ave. Little potential along TH &B	Some potential along Upper Wellington St. north of Fennell Ave. poor potential south of Fennell Ave. Good potential along CHARM, Wellington St. & King William.
OBSTRUCTION OF VIEWS				
o views of escarpment	At entrance to tunnel	enters escarpment in major transportation area where structures now exist		
o views along corridors	James St. corridor has minor impact	John Street corridor has strong impact	----	----
o views of cultural/hist. uses	Hughson/Augusta area	John/Charlton area	----	----
o views from public areas	St. Joseph's Hospital	----	----	----
o length of view disrupted	Views can occur below guideway and between columns, blockage will be an individuals perception.			
DEVELOPMENT/REDEVELOPMENT AT STATIONS				
o Official Plan Goals	----	----	----	King/Wellington as growth node
o Zone	On Mountain, zoned commercial - some pot. for change. Limited opportunity at St. Joseph's area due to character of neighbourhood	Stable residential on Mt. Good opportunity at Inverness. Limited opportunity at St. Joseph's area due to existing development.	Stable residential on Mt. Good opportunity at Inverness. Limited opportunity at Young St. due to TH&B	Stable residential on Mt. Good Opportunity at Inverness. Good opportunity at King/ Wellington due to growth node desire
o Community Impact if redevelopment occurs where opportunities are good.	Low impact	Some impact	Some impact	Some impact
o Land availability for development	Little land available	Little land available	Land available along TH &B	Good land availability at King/Wellington

ROUTE CHARACTERISTICS

	W	X	Y	Z
NATURAL ENVIRONMENT				
o Mature trees removed (mainly lower city impact)	60	40	30	30
o Replaceable trees removed	50	85	50	70
o Significance of tree	larger native species at and immediately below escarpment	larger native species along St. Joseph's Rd.	Minor	Minor
o Replanting capability of area	Good around portal at escarpment	On mountain replanting must occur on private property along alignment due to loss of boulevard. In lower city, replanting is possible.		
CONSTRUCTION				
o Transportation Impacts				
o Diversions	Some traffic diverted to Up. Wellington St.	Some traffic diverted to Up. James St. & Up. Wentworth St.		
o Mountain	Up. James - centre-lane is already built and can be used	Up. Wellington - close down 2 centre lanes/traffic disruption (1400 - 1600 veh/hr)		
	Cut & cover closes two lanes north of Fennell Ave. (2000veh/hr.)	Jolley Cut - close two lanes		
o Lower City	Minor impacts to lower city	Impact when John St. realigned	TH & B/CNR will require special provisions Minor impacts to lower city	Minor impacts to lower city
o Pedestrian Flow	--Major pedestrian disruption is in CBD where common route exists----------			
o Homes-construction disruption to total units	503	671	343	366 plus First Place units
o Business construction disruption relative to total units	Up. James north of Fennell. Major impact dependent upon duration of road disruption	---Upper Wellington St. Business area impacted---------- John St. businesses are impacted	TH &B/CNR will require special provisions	0
Loss of on-site parking	Temporary loss of parking at Mt. Plazas	0	0	0
o Environmental	Temporary impacts on Escarpment face	Minor impacts to St. Joseph's R.O.W.	Minimal impacts	Minimal impacts
o Sensitive Uses	Some impact at St. Joseph's Hospital, but distance & activity at that area of hospital will minimize impact	Strong impact on medical activities along John St. corridor at St. Joseph's Hospital	0	0
COSTS:				
Capital	$111.1 M.	$113.4 M.	$117.2 M.	$125.2 M.
Operating	$3.4 M.	$3.3 M.	$3.3 M.	$3.4 M.
STAGING:				
o Temporary Terminus	Good terminus location due to availability of open space if parking garage required.	Terminal location may require removal/rebuild of Safeway to provide parking area. Dependent upon anticipated park 'n' ride trade.		
o Future Costs to Mall	$32.2 M.	$17.9 M.	$17.9 M.	$17.9 M.
o Future connections	Expansion occurs from loop	Expansion occurs from loop	Expansion occurs from loop	Good connection potential to North and East from King/ Wellington area plus expansion from loop capability to west

7.0 ROUTE EVALUATION

The following three tables illustrate the relative ranking of the characteristics of each of the four routes against the evaluation criteria. The rankings are intended to show Metro Canada's understanding of the performance of each of the routes relative to the other three routes within each criteria. The rankings cannot be compared between criteria, and do not represent a relative weighting of the criteria. Where routes have a similar performance, they have been given a similar ranking. A rank of '1' indicates the best performance, a rank of '4' the worst.

The Route Characteristics shown in Section 6.0 have been combined in Section 7.1 under the appropriate Evaluation Criteria. The evaluation rankings move toward a conclusion in two steps. In Section 7.2, the Evaluation Criteria are combined to form Major Criteria, and the performance of each route is ranked against the Major Criteria. In Section 7.3 the Major Criteria are combined to form four Summary Criteria, again with route rankings.

These tables complement the description of the evaluation presented in earlier sections of this report.

7.1 EVALUATION CRITERIA

Route Characteristics →	Evaluation Criteria	Ranking			
		W	X	Y	Z
Travel time. Ridership Projection.	Ridership - Now	2	1	1	1
Population at Stations. Major Activity Centres. Redevelopment. Major Office Employment. Non-CBD Connections. Extra Travel time.	Ridership - Potential	2	3	4	1

Route Characteristics →	Evaluation Criteria	Ranking			
		W	X	Y	Z
Bus loops. Kiss n' Ride. Maintenance Road. Maintenance Yard. Feeder Bus Miles. Service Area. Bus Miles on Escarpment. Express Service Option. Road Capacity. Pedestrian Movements.	Transportation-Interface	2	3	2	1
Side Street Access. Restrictions. Number of Homes Impacted.	Property Access-Sidestreets	1	2	2	2
Left turns Restricted at Homes.	Property Access Along Route	1	3	3	3
Emergency Uses Impacted. Left Turns Restricted at Businesses. Importance of Access. On-Street Parking.	Property Access At Commercial	1	2	2	2
Apartment Units. Single Family Homes.	Displaced Uses-Housing Units	1	3	2	3
Business Units. Off-Street Parking.	Displaced Uses-Commercial	2	3	3	4
Buildings. Open Space. Potential to Replace. Historical Buildings.	Displaced Uses-Public	2	1	1	1
Overshadowing. Total Houses along Route. Total House at Portal. Privacy Impacts.	Proximity to Uses-Residential	1	4	2	3
Open Space. Sensitivity of Uses. Historical/Architectural Significance.	Proximity to Uses-Public	3	4	1	2
Bus Activity Adjacent to Homes. Local Streets Used by Buses. Parking on Local Streets.	Proximity to Uses-Stations	1	3	4	3

Route Characteristics →	Evaluation Criteria	Ranking			
		W	X	Y	Z
Right-of-Way Widths. Building Face to Building Face. Potential for land use Change.	Integration	1	4	3	2
Escarpment. Road Corridors. Cultural Buildings. Public Areas. Lengths of View.	Obstruction of Views	3	3	2	1
Open Houses. Briefs.	Public Preference	1	3	2	1
Offical Plan Goals. Zoning. Community Impact. Land Availability.	Development/ redevelopment	3	4	4	1
Mature Trees. Replaceable Trees. Significanceof Trees Replanting Capability.	Natural Environment	4	3	1	2
Transportation. Pedestrians.	Construction - Transportation	1	3	4	3
Homes. Businesses. Environmental. Sensitive Uses.	Construction - Properties	3	4	1	2
Capital. Operating.	Costs	1	1	2	3
Temporary Terminus.	Future - Staging	1	2	2	2
Future Connections. Costs to Mall.	Future - Expansion	3	2	2	1

7.2 MAJOR CRITERIA

Evaluation Criteria →	Major Criteria	Ranking			
		W	X	Y	Z
Ridership - Now. Ridership - Potential. Transportation-Interface. Construction - Transportation. Future - Expansion. Future - Staging.	Transportation	2	4	3	1
Property Access - Sidestreets. Property Access Along Route. Property Access at Commercial.	Access	1	3	3	3
Displaced Uses - Housing Units. Displaced Uses - Commercial. Displaced Uses - Public. Proximity to Uses - Residential. Construction - Properties.	Social Impacts	1	4	2	3
Proximity to Uses - Public. Proximity to Uses - Stations. Integration. Obstruction of Views. Natural Environment.	Indirect Social Impacts	3	4	2	1
Public Preference.	Public Input	1	3	2	1
Redevelopment.	Redevelopment	3	4	4	1
Costs.	Cost	1	1	2	3

7.3 SUMMARY CRITERIA

Major Criteria	→ Summary Criteria	Ranking			
		W	X	Y	Z
Transportation Redevelopment	Transportation	2	4	3	1
Access Direct Social Impacts Indirect Social Impacts	Social Impacts	2	4	3	3
Public Input	Public Input	1	3	2	1
Cost	Cost	1	1	2	3